

CLAIMS

1. An IL-6 receptor·IL-6 fusion protein, in which one amino acid residue constituting IL-6 receptor and one amino acid residue constituting IL-6 are directly linked.

2. An IL-6 receptor·IL-6 fusion protein, in which C-terminal of any one of 39 amino acid residues of from N-terminal 323th alanine residue to N-terminal 361th serine residue of IL-6 receptor is linked to an N-terminal amino acid residue of IL-6.

3. A gene for coding for IL-6 receptor·IL-6 fusion protein in which one amino acid residue of IL-6R and one amino acid residue of IL-6 are linked directly.

4. The gene according to claim 3, wherein the gene codes for IL-6 receptor·IL-6 fusion protein in which C-terminal of any one of 39 amino acid residues of from N-terminal 323th alanine residue to N-terminal 361th serine residue of IL-6 receptor is linked to an N-terminal amino acid residue of IL-6.

5. A yeast of *Pichia pastoris* species which is transformed by an expression vector containing a gene for coding for IL-6 receptor·IL-6 fusion protein in which one amino acid residue of IL-6 receptor and one amino acid residue of IL-6 are linked directly.

6. The yeast of *Pichia pastoris* species according to claim 5, which is transformed by an expression vector containing a gene for coding for IL-6R·IL-6 fusion protein in which C-terminal of any one of 39 amino acid residues of from N-terminal 323th alanine residue to N-terminal 361th

serine residue of IL-6 receptor is linked to an N-terminal amino acid residue of IL-6.

7. A process for producing an IL-6 receptor·IL-6 fusion protein, comprising a step of cultivating in a culture medium a yeast of a *Pichia pastoris* species having been transformed by an expression vector containing a gene for coding for an IL-6 receptor·IL-6 fusion protein in which one amino acid residue of IL-6 receptor and one amino acid residue of IL-6 are linked directly; and a step of collecting the IL-6 receptor·IL-6 fusion protein as a secretory protein from the culture medium.

8. A process for producing an IL-6 receptor·IL-6 fusion protein, comprising a step of cultivating in a culture medium a yeast of a *Pichia pastoris* species set forth in claim 5 having been transformed by an expression vector containing a gene for coding for an IL-6 receptor·IL-6 fusion protein in which C-terminal of any one of 39 amino acid residues of from N-terminal 323th alanine residue to N-terminal 361th serine residue of IL-6 receptor is linked to an N-terminal amino acid residue of IL-6; and a step of collecting the IL-6 receptor·IL-6 fusion protein as a secretory protein from the culture medium.

9. A process for producing an IL-6 receptor·IL-6 fusion protein, comprising a step of cultivating a yeast of a *Pichia pastoris* species having been transformed by an expression vector containing a gene for coding for an IL-6 receptor·IL-6 fusion protein in which one amino acid residue of IL-6 receptor and one amino acid residue of IL-6 are

linked directly, in a culture medium of natural origin containing a carbon source and no methanol, and adding methanol during progress of the cultivation.

10. A process for producing an IL-6 receptor·IL-6 fusion protein, comprising a step of cultivating a yeast of a *Pichia pastoris* species having been transformed by an expression vector containing a gene for coding for an IL-6 receptor·IL-6 fusion protein in which C-terminal of any one of 39 amino acid residues of from N-terminal 323th alanine residue to N-terminal 361th serine residue of IL-6 receptor is linked to an N-terminal amino acid residue of IL-6.

11. A process for producing an IL-6 receptor·IL-6 fusion protein, comprising collecting the IL-6 receptor·IL-6 fusion protein by treating a solution containing IL-6 receptor·IL-6 fusion protein, in which one amino acid residue of IL-6 receptor and one amino acid residue of IL-6 are linked directly, by three kinds of chromatography including ion-exchange chromatography, hydrophobic chromatography, and gel-filtration chromatography to collect the IL-6 receptor·IL-6 fusion protein.

12. A process for producing an IL-6 receptor·IL-6 fusion protein, comprising collecting the IL-6 receptor·IL-6 fusion protein by treating a solution containing IL-6 receptor·IL-6 fusion protein, in which C-terminal of any one of 39 amino acid residues of from N-terminal 323th alanine residue to N-terminal 361th serine residue of IL-6 receptor is linked to an N-terminal amino acid residue of IL-6, by three kinds of chromatography including ion-exchange

chromatography, hydrophobic chromatography, and gel-filtration chromatography to collect the IL-6 receptor·IL-6 fusion protein.

13. An ex vivo amplifier for a hematopoietic stem cells, comprising an IL-6 receptor·IL-6 fusion protein in which one amino acid residue of IL-6 receptor and one amino acid residue of IL-6 are directly linked.

14. An ex vivo amplifier for a hematopoietic stem cells, comprising an IL-6 receptor·IL-6 fusion protein in which C-terminal of any one of 39 amino acid residues of from N-terminal 323th alanine residue to N-terminal 361th serine residue of IL-6 receptor is linked to an N-terminal amino acid residue of IL-6.

15. A blood platelet proliferating agent containing as a main component an IL-6 receptor·IL-6 fusion protein in which one amino acid residue of IL-6 receptor and one amino acid residue of IL-6 are directly linked.

16. A blood platelet proliferating agent containing as a main component an IL-6 receptor·IL-6 fusion protein in which C-terminal of any one of 39 amino acid residues of from N-terminal 323th alanine residue to N-terminal 361th serine residue of IL-6 receptor is linked to an N-terminal amino acid residue of IL-6.